

PATENT

Docket No.: 176/60981 (6-11402-1001)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Mahin D. Maines

Serial No.

10/045,545

Cnfrm. No.:

To Be Assigned

Filed

January 14, 2002

For

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Examiner: To Be Assigned

Art Unit:

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INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §§ 1.97-1.98

Commissioner for Patents Washington, D.C. 20231

Dear Sir:

Pursuant to 37 CFR §§ 1.97-1.98, applicant hereby brings to the attention of the United States Patent and Trademark Office, the enclosed references listed on the attached PTO-1449 form.

Respectfully submitted,

Date: February 8, 2002

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Wendy L. Harrold

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DOCUMENT NUMBER DATE COUNTRY CLASS SUBCLA	TRANS- LATION IF APPRO- PRIATE						
OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)							
1 Panahian et al., "Enhanced Neuronal Expression of the Oxidoreductase - Biliverdin Reductase - After Permaner	nt Focal						
Cerebral Ischemia," Brain Research 850:1-13 (1999)							
2 Maines et al., "Spin Trap (N-t-butyl-α-phenylnitrone)-Mediated Suprainduction of Heme Oxygenase-1 in Kidn	ey Ischemia/						
Reperfusion Model: Role of the Oxygenase in Protection Against Oxidative Injury," The Journal of Pharmacol							
Experimental Therapeutics 291(2):911-919 (1999)							
3 Maines et al., "Human Biliverdin IXα Reductase is a Zinc-Metalloprotein: Characterization of Purified and Esc	cherichia coli 🔫						
Expressed Enzymes," <u>Eur. J. Biochem.</u> 235:372-381 (1996)							
4 McCoubrey et al., "Site-Directed Mutagenesis of Cysteine Residues in Biliverdin Reductase: Roles in Substrat	e and						
Cofactor Binding," <u>Eur. J. Biochem.</u> 22:597-603 (1994)	<u> </u>						
5 Ewing et al., "Biliverdin Reductase is Heat Resistant and Coexpressed with Constitutive and Heat Shock Forms	of +						
Heme Oxygenase in Brain," J. Neurochem. 61:1015-1023 (1993)							
6 Maines et al., "Purification and Characterization of Human Biliverdine Reductase," Archives of Biochemistry a	nd Biophysics						
300(1):320-326 (1993)	· .						
7 Fakhrai et al., "Expression and Characterization of a cDNA for Rat Kidney Biliverdin Reductase," J. Biol. Che	<u>m.</u>						
267(6):4023-4029 (1992)							
8 Huang et al., "Detection of 10 Variants of Biliverdin Reductase in Rat Liver by Two-Dimensional Gel Electrop	horesis,"						
J. Biol. Chem. 264(14):7844-7849 (1989)							
EXAMINER DATE CONSIDERED							
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	9		et al., "Microheterogeneity of Biliverdin Reductase in Rat Liver and Spleen: Selective Suppression of Enzyme +									
		Variants in Liv	n Liver by Bromobenzene," Archives of Biochemistry and Biophysics 274(2):617-625 (1989)									
	10	Huang et al., "	ang et al., "Multiple Forms of Biliverdin Reductase: Modification of the Pattern of Expression in Rat Liver by									
				f Biochemistry and B					<u> </u>			
	-11		 	uctase: Characterizat		at Kidney and the In	hibition of Act	ivity by Mercuric	A			
		 		ac.32(13):2095-2102								
	. 12	Kutty et al., "Purification and Characterization of Biliverden Reductase from Rat Liver," J. Biol. Chem. 256(8):3956-3962 (19										
		Votate et al. "	Ovidation of U	eme c Derivatives by	Durified H	eme Ovygenase " I	Riol Chem 25	7(17):9944-9952 (1	.982) 🔏			
	13	Kutty et al.,	- Aluauon oi H	cone e Denvauves D	, a unified file	one on genase, J.		:	/			
	14	Van Bergen. "	Hemoglobin a	and Iron-Evoked Oxid	lative Stress	s in the Brain: Protec	ction by Bile Pi	gments, Manganes	· · · · · · · · · · · · · · · · · · ·			
				Free Rad. Res. 31:631			<u> </u>					
	15	ļ <u> — </u>					s by Zn-Protop	orphyrin,"	<u> </u>			
		Qato et al., "Prevention of Neonatal Hyperbilirubinaemia in Non-Human Primates by Zn-Protoporphyrin," Biochem. J. 226:51-57 (1985)										
	16		a et al., "Heme Oxygenase-1, Heme Oxygenase-2 and Biliverdin Reductase in Peripheral Ganglia from Rat,									
Expression and Plasticity," Neuroscience 95(3):821-829 (2000)												
	17	 	ing et al., "Immunohistochemical Localization of Biliverdin Reductase in Rat Brain: Age Related Expression of									
				in Research 672:29-4								
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	18		an et al., "Identification of the Amino Acid Residues Essential for the Activity and the Interconversion of the								
		<u> </u>			ochimica et Biophysica Acta 10			A advatase =			
	19		. —	cture, Organizatio	n and Differential Expression o	or the Kat Gene	Encoding Biliverdin R				
		Gene 160:235-2		a-Madiat-1 11	tion in Activity and Diseased	retic Pottom - C	Biliverdin Reductors				
	20			ol. Pharmacol. 37:2	tion in Activity and Electropho	oredo I aucili OI	Different Reductase				
	-				elation to Bilirubin," <u>Biochem</u>	ical Society Ten	nsactions 20:3538 (199	92) v			
	21	Beil et al., "Bil	Kedu	omoc Acuvity in K	olocuem, Diocuem	TOOLOGY 118	(19:				
	22	Kuttvet al "D	at Liver Cuto	chrome P-450h P	-420b, and P-420c are Degrade	d to Biliverdin	by Heme Oxygenase."				
					(2):638-644 (1988)			Κ'			
•	23				of Biliverdin Reductase," Arch	ives of Biocher	nistry and Biophysics				
		263(1):1-9 (198			,			K -			
	24			Metabolism: Poss	sible Role of Biliverdin in the F	Regulation of He	eme Oxygenase Activit				
		Biochemical an			γ						
	25				and Biliverdin-IXβ Reductase		ver," - <				
				13-24348 (1994)		 	v				
	26	 			n of Heme Metabolism and The	eir Implications	,··				
				oxicology 12(3):24				1			
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		отне	R DOCUME	NTS (including A	Author, Title,	Date, Pertinent Pa	ges, Etc	.)				
	27	Тепту et al., "Ir	activation of	Phytochrome- and	l Phycobiliprot	tein-Chromophore I	Precurso	s by Rat	Liver &			
		Biliverdin Red	uctase," <u>J. Bi</u>	ol. Chem. 268(35)	:26099-26106	(1993)						
	28	Willis et al., "Heme Oxygenase: A Novel Target for the Modulation of the Inflammatory Response,"										
		Nature Medicin	<u>ne</u> 2(1):87-90	(1996)	·							
	29	Maines, "Char	cterization o	f Heme Oxygenas	e Activity in L	eydig and Sertoli C	ells of th	e Rat Te	stes," 🔀			
		Biochemical P	harmacology 33(9):1493-1502 (1984)									
	30	Lee et al., "Ove	erexpression of	of Heme Oxygena	se-1 in Human	Pulmonary Epithel	ial Cells	Results	in Cell Growth Arr	est 🗶		
		and Increased l	Resistance to	Hyperoxia," <u>Proc.</u>	Natl. Acad. So	ci. USA 93:10393-1	0398 (1	996)				
	31	Siow et al., "H	eme Oxygena	se-Carbon Monox	tide Signalling	Pathway in Athero	sclerosis	: Anti-A	therogenic Actions	of		
·		Bilirubin and C	arbon Mono	cide?," <u>Cardiovas</u> c	cular Research	41:385-394 (1999)	ı		<u>.</u>			
	32	Komuro et al.,	"Cloning and	Characterization	of the cDNA E	Encoding Human Bi	liverdin-	IXα Rec	luctase," Ç			
		Biochimica et	Biophysica A	cta 1309:89-99 (1	996)							
	33	Cunningham e	al., "Cloning	, Overexpression	and Purificatio	n of Biliverdin IX-	β Reduc	ase,"	4			
		Biochemical Society Transactions 25:S613 (1997)										
	34	Yamaguchi et a	ıl., "Complete	Amino Acid Seq	uence of Bilive	erdin-IXβ Reductas	se from I	Iuman L	iver,"			
		Biochemical ar	ıd Biophysica	l Research Comm	unications 197	7(3):1518-1523 (19	93)		W.			
	35	Ennis et al., "E	xpression of l	Rat Biliverdin Red	luctase as a Gl	utathione S-transfer	rase Fusi	on Prote	in,"			
		Biochemical Society Transactions 23:443S (1995)							····			
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	36	Bari et al., "Tl	ne Interplay Be	etween Basicity, C	onformation, and Enzymatic Re	duction in B	Biliverdi	ins,"			
		Biochemical and Biophysical Research Communications 188(1):48-56 (1992)									
	37	Maines, "Mult	tiple Forms of	Biliverdin Reduct	ase: Age-Related Change in Pa	ttern of Expi	ression	in Rat Liver and B	rain," 🛕		
		Molecular Pha	rmacology 38	:481-485 (1990)							
	38	Mayer et al., "	Promotion of	trans-Platinum In	Vivo Effects on Renal Heme and	d Hemoprote	ein Met	abolism by D,	• •		
		L-Buthionine-	S,R-Sulfoximi	ne," Biochemical	Pharmacology 39(10):1565-157	71 (1990)		,	~		
	39	Mancuso et al.	, "Activation	of Heme Oxygena	se and Consequent Carbon Mon	oxide Form	ation In	hibits the Release	of		
		Arginine Vaso	pressin from I	Rat Hypothalamic	Explants. Molecular Linkage B	letween Hen	ne Catal	bolism and Neuroe	endocrine		
		Function," Mo	lecular Brain	Research 50:267-	276 (1997)						
					`						
	40	Guerre et al., '	'Dose-Related	Increase in Liver	Heme Catabolism During Rabb	it Aflatoxico	osis,"	Κ			
		Toxicology Le	etters 92:101-1	08 (1997)							
	41	Ennis et al., "(Cloning and O	verexpression of I	Rat Kidney Biliverdin IXa Redu	ctase as a Fr	usion Pr	rotein with Glutath	ione		
		S-transferase:	S-transferase: Stereochemistry of NADH Oxidation and Evidence that the Presence of the Glutathione S-transferase								
	·	Domain Does	Not Effect BV	/R-A Activity," B	iochem. J. 326:33-36 (1997)	<u> </u>			~		
	42	Lagarias et al.	Lagarias et al., "Regulation of Photomorphogenesis by Expression of Mammalian Biliverdin Reductase in Transgenic								
		Arabidopsis P	lants," The Pla	ant Cell 9:675-688	3 (1997)						
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